The Print Function

The word “print()” is a function in Python. A function takes an input, does something with it, and spits it out. In this case, the print function will take what we put into the brackets (input), do something with it (if necessary), and then output it to the screen.

print (“Monty Python’s Flying Circus”)

Inputs go into the brackets

Some of the things you can print are whole numbers (integers), decimal numbers (floats), words and sentences (strings). There are other things you can print (like variables, and Booleans), but we will learn that later.

A **string** is any series of characters that are enclosed in quotation marks. The characters can be anything you can type on the keyboard (characters, numbers, symbols), but it is <u>important</u> that they are enclosed in quotation marks.

- The quotes tell Python “I don’t care what is inside the quotes, just print it onto the screen”
- Eg. **print(“c u l8r, :P is pretty lazy typing if you ask me”)**

Two “real life” strings

As mentioned earlier, Python can handle numbers and arithmetic expressions as well, and you do not need to use “quotation marks” either since you are only dealing with numbers and symbols (and not letters). However, you are ALWAYS required to use BRACKETS to surround the data. For example:

- **print (2)** → this will put a 2 on the screen
- **print (2 + 2)** → this will put a 4 on the screen (Python does the math for you)

…….. speaking of math

Arithmetic

The following operations follow the usual BEDMAS rules and can be executed in Python:

OPERATION	SYMBOL	EXAMPLE	
Brackets	**( )**	**(2 + 2) * 3**	
Addition	**+**	**1 + 1**	
Subtraction	**-**	**2 – 1**	
Multiplication	*****	**2 * 3**	**(2 x 3)**
Division	**/**	**5/2**	**(5 ÷ 2) = 2.5**
Integer Division	**//**	**5//2**	**(5 ÷ 2) = 2 (1 rem)**
Modulus	**% (finds the remainder)**	**5%2**	**result is 1**
Exponents	******	**2**3**	**2^3**

ENGLISH: **$2 \times (6 - 2)^3 + 4 \div 5$** **=** **Python:** **2 * (6 – 2)**3 + 4/5**

Let's practice doing some math with the following exercises.

Exercises

1. Provide the output for the following code (type the code in the interpreter and hit enter):

a. **print (235 + 89)** _____

b. **print ("235 + 89")** _____

c. **print ("235" + "89")** _____

d. Did you notice how the quotations changed your output? Why do you think your output for a) and b) were different?

e. What did the addition (+) sign do when you added two strings together in c)?

2. Provide the output for the following code

a. **print (89 + 4 – 64)** _____

b. **print (3 * 2 + 4**) **10** OR **18** **Why?:**_____

c. **print (144/10)** _____

d. **print (3**2)** _____

e. **print (5 + 6 * 3)** _____

f. **print ((5 + 6) * 3)** _____

g. Why did the output for e differ from f?

_____

h. **print (5 % 3)** _____

i. **print (3 % 5)** _____

Modulus:
The % finds the remainder from an integer division. For example: 13/3 would equal to 4 (3 goes into 13, 4 times) , and there would be a remainder of one.

So 13//3 = 4
13%3 = 1

Combining Strings and Numbers

If you want to combine a string with a number, Python requires that you convert the number into a string so that it can join with the original string. Confusing? Give this a try:

print ("10 x 7 = " + 10 * 7)

How am I supposed to join two things that are totally different?

Did you get a syntax error? We need to fix this so that 10 * 7 becomes a string. Only then can it join "10 x 7 =". The function str() will turn any numeric value that you put into the brackets into a string.

print ("10 x 7 = " + str(10 * 7))

Converts the result of (10 * 7) into a string. We can now join them with the + sign

Another way to do this would be to seperate the string and the integer/float with a comma:

print("10 x 7 = ", 10 * 7)

Exercises (continued):

3. Correct the following code so that it outputs ***324*4=1296***:

```
print("324*4"  "=" + 324*4
```

4. The output looks a little cramped. What can you do to make your output look like this (with spaces):

```
324 * 4 = 1296
```

5. Write a program to calculate the following:
   a. the area of a circle with radius 10
   b. the annual interest payable on a loan of $5435.32 at 12.5% per annum
   c. a 15% tip for a meal costing $23.53
   d. CHALLENGE: The hypotenuse of a triangle with sides 15cm and 20cm (you will have to figure out how to find the square root of a number)

Special Characters

Typing the following characters within a string will do specific things:

Character	What it does	Example
\n	Adds a new line to your output (line space)	print("Hello \n World")
\t	Adds a tab break to your output	print("Enter name: \t")
****	Adds a \ character to your output	print("C:\\username\\folder")
\"	Adds a quote to your output	print("It's a \"laser\" beam")

6. If you need to add many spaces, you can add TAB breaks into your output to space your output apart by using **\t** in your string. Try to figure out how to get the following output.
   Note: you will have to do this in a new code editor window and NOT in the shell

```
Name:           Monty Python
Country:        Great Britain
Year Started:   1969
Year Ended:     1974
```

7. Write a program that contains output with all the special characters listed in the table above.

CHALLENGE QUESTION

8. Let's say somebody gave you his or her birthday as one long integer (ex. 19801113)
   Break this number up using integer division and modulus so that your program output looks as follows:
   Year: 1980
   Month: 11
   Day: 13